REMARKS

This amendment is responsive to the Office Action dated Feb. 26, 2004.

DRAWINGS. The Patent Office noted the absence in the drawings of reference number 29, referred to in paragraph [0070], objected to that lack, and required correction of the drawings. In light of the amendments made to the specification, the objection to the drawings is believed to be rendered moot and should no longer be required. Reference number 29 was used in paragraph [0070] in connection with the module housing. However, reference number 29 was previously used in paragraph [0030] for capacitor 29 (see Fig. 1). By this amendment, the number "29" was deleted from paragraph [0070].

SPECIFICATION. The Patent Office objected to the disclosure because the reference number 1 was used to refer to both the LRM module and a power conditioner. By this amendment, the reference to the number "1" in connection with the power conditioner in paragraph [0070] has been deleted. Applicant believes the foregoing amendment cures the objection.

THE CLAIMS.

Claim 9 was rejected under 35 U.S.C.112, second paragraph as indefinite, the Patent Office asserting that the term "shallow" is a relative term that renders the claim indefinite and that the term "depth" was made indefinite by the incorporation of the term shallow. Further the term "said tempest filter, " was said to lack antecedent. Claim 9 is amended to include antecedent for the term tempest. Further the claim has been amended to recite that the length of the housing is substantially greater than the depth of the housing. That phrasing, applicant submits, is reasonably definite, and should convey to those skilled in the art that the housing is shallow. Further, the claim is not dependent on shallow or the like for patentability. Hence any indefiniteness, if present, would appear harmless. Applicant believes that the claim is now definite within the meaning of 35 U.S.C. 112.

Claims 1 and 2 were rejected under 35 U.S.C. 103(a) unpatentable over Hansel et al. U.S. 4,694,194, in view of Gregorich et al, U.S. 5,289,046 and Breikss, U.S. 4,122,359. This rejection is respectfully traversed.

The patent to **Hansel** discloses a power supply that contains a back up battery. Should the power mains temporarily fail or should there occur a "brownout" in the power mains the back up battery supplies electrical power for a limited period to prevent volatile data in a MOS memory of a digital computer system from being destroyed. The system of Hansel monitors line voltage and the rate of change in line voltage level to ascertain whether the voltage is increasing or decreasing at the moment a prescribed voltage level occurs, and employs synchronous switching of the backup battery into the power circuit when the change detected is that the line voltage is failing (e.g. line voltage drops below a certain level) or switching the battery out of the power circuit when the power is resuming (e.g. the line voltage is being restored to normal levels). By picking an exact voltage level at which the declining (or increasing) rectified voltage becomes equal to the voltage of the backup battery the switch-over from one power source to the other (e.g. the back up battery) or vice-versa occurs without giving rise to the generation of voltage transients or large surges, which are deleterious to MOS semiconductor memories.

Breikss teaches a protection arrangement for semiconductor memory that includes a regulated power supply and a battery that produces a voltage that is lower in level than the voltage of the regulated power supply. The back up battery is provided to ensure that electrical power continues to be applied to the semiconductor memory in the event the main power source fails. That's the same kind of memory protection found in the Hensel patent (see col. 1 lines 5-12 of Hensel, which states "*This type of power supply with battery backup is particularly useful for preventing a temporary power loss from destroying volatile data in a MOS memory of a digital computer system*".

Breikss wishes to reduce the complexity of the electronic monitoring and control circuits of a standby backup battery system. He does so through use of a rectifier diode 38 that is connected in series with the back up battery 36. When the voltage supplied by the regulated power supply 22 is normal (and greater than the voltage of battery 36) diode 38 is back biased (e.g. reverse poled relative to the applied voltages) and,

therefore, the diode cannot pass current (from the battery) to the power circuits of RAM memory 20. Only the regulated supply 22 supplies that current. However If regulated power supply 22 is failing, that supply falls to a lower voltage, below the voltage of the backup battery. In that event, rectifier diode 38 becomes forward biased and permits battery 36 to supply current to the power circuit of RAM memory 20.

Though seemingly simple in design, Breikss doesn't describe the circuits necessary to actually regulate the regulated power supply 22 or how complex those circuits may be, which are likely substantial. Whereas Hensel doesn't require a regulated power supply in order to be functional, Breikss does.

As one appreciates, If the principal power supply in Breikss were instead unregulated, many normal dips in voltage produced in normal operation may "look" like a temporary power failure to the circuit and likely produce many corresponding dips in output voltage from the principal power supply. Those dips in output could result in the backup battery 36 supplying current so frequently at inappropriate times that the battery would quickly become drained of electrical power. Since battery 36 is not rechargeable, the battery would then fail to serve the backup function and requires replacement.

In applicant's view, Breikss represents a tradeoff in complexity of the backup power systems, reducing the complexity of the monitoring and switching circuits but increasing the complexity of the principal power supply by requiring regulation of that power supply.

Gregorich discloses an AC power supply with two branches one of which includes a battery array of rechargeable batteries and a battery charger. AC is applied at input 4 (AC LINE) and outputs as AC at converter 20 to a LOAD.

With respect to **claim 1** the rejection asserts that Hansell discloses a power supply containing an input and an output. Applicant agrees. The rejection next asserts that Hansell also discloses a power module comprising a first branch and a second branch for supplying a voltage. The line source and the backup battery in Hensel represent separate sources of electrical power that are coupled to an electrical load at different times. They are not separate branches (of a single source) as the rejection incorrectly states.

Whatever the meaning may be to Examiner's vague statement the stated structure is certainly not the two branches recited in claim 1. Claim 1 recites:

a first branch circuit for receiving a portion of the power admitted at said module input and modifying said supply voltage to a first predetermined voltage level and supplying said supply voltage to a first branch circuit output;

a second branch circuit for receiving another portion of the power admitted at said module input and supplying a second predetermined voltage at a second branch output, said second predetermined voltage being less than said first predetermined voltage;

The two so-called branches in Hansel do not receive portions of the power admitted at the module input. One branch does, but the other doesn't receive any portion of that input power at all. There is no branching from the module input in Hansel. What is shown in Hansel are two separate sources of power that converge toward one output. That structure is more like "roots" than "branches." In addition to lacking the foregoing "branches," the rejection concedes that Hansel fails to teach that the power supply's second branch produces a voltage that is smaller in level than the voltage from the first branch and that the second branch includes a battery charger.

Neither Hansel or Breikss find need for a battery charger to recharge the backup battery in their respective circuits. Battery chargers have been around for many years and those skilled in power supplies, such as Hansel and/or Breikss, would certainly be aware of that equipment. Yet both chose not to incorporate one in their system. The reason is apparent. The back up systems in Hansel and Breikss are not intended to be used (and won't be used) very often and certainly not for any extended length of time. A regular dry battery should remain charged for many years in that application. In that circumstance there's no need to increase the size and weight and cost of the power supply unit in Hansel with a rechargeable battery and a battery charger. Just replace the battery every two years or so. That action is quick, simple, cheap and inexpensive.

The rejection concludes that it would have been obvious ... to combine the two different voltage levels of Breikss and the battery charger of Gregorich with power supply battery backup of Hansell. The rejection reasons that "*the battery can supply maintenance energy for the memory when the power supply voltage decays below the*

battery voltage" and "*because the battery charger allows the battery to maintain its charge when not in use and prolongs its lifetime.*" Applicant cannot understand the reasoning or the conclusion. Specifically, applicant is unable to determine the structure of the Hansel power supply following the prescribed modifications to include the cited portions of the Breikss and Gregorich patents. Applicant respectfully requests clarification, should the Patent Office persist in the rejection.

First, applicant does not understand the motive for including a battery charger in the circuit of Hansel or how the person of ordinary skill would be physically able to include the battery charger of Gregorich in the power supply battery backup of Hansel and obtain a combination that is functional. Applicant's reasoning is that Hensel contains a backup battery. But there is no clue or statement in Hensel that the backup battery in Hensel is rechargeable, and there is no teaching or suggestion of a recharger in Hensel. The evidence therefore is that the battery of Hensel is not rechargable.

Examiner is perhaps suggesting that the application of a battery charger to a non-rechargeable battery makes that battery into one that is rechargable or that the combination of a battery charger to a non-rechargeable battery is acceptable to meet the applicant's claim even if the proposed combination is inoperative. Applicant submits that either suggestion is poor science and poor engineering and that one skilled in the art would never entertain either such thought. Using a battery charger on a non-rechargeable battery is likely to result in an explosion or fire. Applicant submits that under the patent law one cannot show obviousness of a patent claim by divining an inoperable combination.

Second, there is no motive or reason to change the voltage levels in Hensel. According to Hensel the synchronous switching system functions properly. What would lead any person to make the system of Hensel non-synchronous as in Breikss? What would lead one skilled in the art to take action contrary to that desired by Hensel and destroy his synchronous system. Applicant submits that such motivation is not taught or apparent. The proposed modification is contrary to the teachings of Hensel. For that additional reason the rejection fails.

Applicant submits that the rejection appears to be a focused effort to reconstruct the claimed subject matter using the benefit of impermissible hindsight gleaned from the applicant's specification; and, despite the benefit of that hindsight, the effort fails.

The rejection also reasons that Hansel teaches a charge device coupled to the first branch, that Hansel teaches the output filter being a capacitance filter that produces a constant voltage at its output, citing Fig. 1 and Col 2, lines 59-65. Applicant disagrees with the foregoing assertion and refers to col 2, lines 59-62, which states that the voltage "*is then applied to an output filter 34 which typically comprises a conventional series inductance and shunt capacitance filter which produces a substantially constant DC voltage of 5 volts at its output 20 regardless of the current being supplied by the power supply or the input voltage at 10.*" Thus, contrary to the Examiner's statement, the capacitor doesn't produce the constant voltage, but the tuned circuit of inductance and series connected capacitance produces that constant voltage. Moreover as shown in Fig. 1 that output filter 34 is at the juncture of what Examiner refers to as branches in the circuit. Thus, not only does that series tuned circuit receive voltage from what Examiner refers to as the first branch, the tuned circuit also receives voltage from the so-called second branch, should the first branch fail. That operation is consistent with the cited statement in the Hansel patent, and is inconsistent with Examiner's assertions.

Claim 1 recites a charge storage device coupled to said first branch output for storing a charge of electricity supplied from said first branch output for providing an output at said first branch output for a predetermined interval when said first branch circuit terminates supplying supply voltage to said first branch output, said output of said charge storage device declining in voltage level over said predetermined interval. That is not a power supply filter capacitor as in Hansel, but a hold up capacitor whose function is described in more detail in paragraph 36 of the present specification, to supply current to the switch 23 and microcontroller 14 for a period after the mains power is removed. For the foregoing reasons applicant submits that the rejection of claim 1 as being obvious is in error. Applicant respectfully requests that the Patent Office reconsider and withdraw the rejection of claim 1.

As to dependent **claim 2**, dependent on claim 1, the rejection reasons that Hansel, Breikss and Gregorich teach all the limitations including adjustable control means for the first and second branch circuits. Applicant respectfully disagrees. Applicant refers to and incorporates herewith the discussion of the rejection of claim 1. For the foregoing reason, applicant believes that claim 2 defines patentable subject

matter. Applicant respectfully requests that the Patent Office reconsider and withdraw the rejection of claim 2.

Claims 3-5 were rejected under 35 U.S.C. 103(a) as unpatentable over Hansel in view of Breikss, Gregorich, and Wiegel. This rejection is respectfully traversed. Applicant refers to and incorporates herewithin the discussion of the rejection of claim 1. As described in that discussion, the Hansel patent does not contain the structure represented to be present by Examiner, but contains different structure. Since the Hansel patent is lacking in the basic structure claimed, applicant submits that any additions tacked onto the Hansel power supply by structure taken from any of the cited additional references to Breikss and Gregorich, is of no purpose since the combinations assertedly formed also remain lacking, because Hansel is lacking in necessary structure. For the foregoing reason alone, applicant submits the rejection is in error and should be reconsidered and withdrawn. In this rejection of claim 3 and claims 4 and 5, dependent thereon, Examiner combines the subject matter of a fourth patent to the asserted combination of Hansel, Breikss and Gregorich, the patent to Wiegel, and states that Wiegel discloses a battery backup power source for avionics equipment. For the motive to add the structure of Wiegel, the Office Action states: "*This would have also been obvious...to use for avionics equipment since they require backup power instantaneously.*"

Applicant is unable to understand the foregoing reasoning. Assuming as stated in Weigel that an avionics system requires backup power instantaneously in the event of an undesired power failure, the rejection fails to clearly state or identify (and applicant is unable to determine) the structural changes found in Weigel that are being made in Hansel or the other patents to ensure that the proposed reconstruction of Hansel produces instantaneous power backup? In the event Examiner persists in the rejection, applicant requests more detailed clarification.

Claim 3 calls not only for application of the power supply to an avionics system, but also specifies that "*said avionics system having first and second electronic components with both said components being active when supplied with a first predetermined voltage and only said second electronic component being active when*

both said components are supplied with a second predetermined voltage that is lower in voltage level than said first predetermined voltage," Applicant submits that the patent to Weigel does not contain, show or teach such an avionics system. For that additional reason, applicant submits that claims 3-5 are not rendered obvious over any combination of Hansel, Breikss, Gregorich, and Wiegel.

The claimed system is not intended as a backup power supply system for an avionics system, but a holding power supply for the key memory part of an avionics system when the main power to the avionics system is deliberately turned off for maintenance, as example, as brought out in applicant's specification.

Claim 3 also recites:

"*said capacitance being coupled to said microcontroller for supplying said microcontroller with temporary operating power for a short time interval following any termination of current from said first channel to said supply output, said temporary operating power being derived from said electrical charge stored in said capacitance, whereby said microcontroller continues to function for a short time interval in the event of failure of said first channel or of said external source;*

said capacitance further being coupled to said semiconductor switch for supplying said semiconductor switch continued power for a short time interval, said temporary operating power derived from said electrical charge stored in said capacitance, whereby said semiconductor switch remains in its normal condition for a short time interval following termination of current from said first channel to said supply output, and thereafter couples said second channel to said supply output."

The foregoing elements and the respective connection are not shown or taught by any combination of Hansel, Breikss, Gregorich or Wiegel. For that additional reason, applicant submits that claim 3 cannot be rendered obvious over Hansel, Breikss, Gregorich and Wiegel. Applicant respectfully requests the Patent Office to reconsider and withdraw the rejection of claim 3.

Dependent **claim 4** specifies that first channel *contains a transformer; a regulator; an adjustable filter; and a control unit.* Dependent **claim 5** specifies that not

only does the first channel contain a transformer; a regulator; an adjustable filter; and a control unit, but that the second channel contains the same elements as well. In answer the Patent Office points out that Hansell teaches "*the use of an output rectifier, which is interpreted as a regulator, and an output filter...*" Since Hansel as earlier pointed out does not contain the second channel (as claimed), the rejection ignores the second channel as set forth in claim 5 entirely. The rejection also ignores the recitation in claims 4 and 5 that the filter is adjustable. Giving significance to the recitation of adjustability, claims 5 and 6 also recite that the control unit "controls a characteristic of ...said output filter, responsive to commands inputted from said microcontroller."

First, applicant does not understand how a rectifier is able to be "interpreted" as a regulator. Is there something in the Patent Law that permits the patent office to change the content of an element in a reference by interpretation to be something other than that given in the reference: as example interpreting a truck as an airplane, or interpreting a resistor as a battery, and so on? Applicant submits that such interpretation is unreasonable. Being unreasonable the interpretation of the content of Hansel is therefore improper in any evaluation of obviousness of the claims under 35 USC 103.

Secondly, because the reconstruction of Hansel does not include all of the elements recited in claims 4 and 5, such as the adjustable filter and the microcontroller commands and control unit for changing the filter, the reconstruction proposed by the Patent Office is incomplete. Specifically lacking some recited elements the claimed combination cannot be rendered obvious by the cited references in applicant's view. For the foregoing additional reason applicant is of the opinion that the claims define patentable subject matter. Applicant respectfully requests that the Patent Office reconsider and withdraw the rejection of claims 4 and 5.

Dependent **claims 6, 7 and 8** were rejected under 35 U.S.C. 103(a) as unpatentable over Hansel in view of Breikss, Gregorich, Wiegel and Brown, U.S. 5,481,730. This rejection is respectfully traversed.

Applicant refers to the discussion of the rejection of claim 5, which is incorporated herein by reference. For that reason alone applicant submits that claims 6-8 cannot be rendered obvious over Hansel in view of any one or more of the secondary references. Brown is cited to show a power supply in which input and output

voltages are monitored. The Patent Office concludes "It would be obvious...to combine the monitoring of voltage and current on both the primary and secondary side of Brown to both the first and second channels of Hansel, Briekss, Gregorich and Wiegel. This would have been obvious ...because it is desirable to monitor important parameters from the primary and secondary sides of a power supply." Applicant doesn't deny that monitoring is desirable. But does notes that the addition of the monitoring of Brown fails to cure the underlying lack in the combination of Hansel, Briekss, Gregorich and Wiegel. Applicant respectfully requests the Patent Office to reconsider and withdraw the rejection of dependent claims 6-8.

Claims 9 and 10 were rejected under 35 U.S.C. 103(a) as unpatentable over Hansel in view of Breikss, Gregorich, Wiegel and Goossen et al, U.S. Publication 2003/0029687.

The rejection makes a number of statements of fact as to the content of the Hansel patent. While many of those statements are correct, some are incorrect or vague. Those are set out hereafter and discussed. By reason of the incorrect statements, the Hansel patent is lacking in structure to anticipate claims 9 and 10.

"*Hansel teaches the output filter being a capacitance that produces a constant voltage at its output (See Fig. 1 and Col. 2, lines 59-65).*"

Applicant disagrees with the foregoing assertion and refers to col 2, lines 59-62, which states that the voltage "*is then applied to an output filter 34 which typically comprises a conventional series inductance and shunt capacitance filter which produces a substantially constant DC voltage of 5 volts at its output 20 regardless of the current being supplied by the power supply or the input voltage at 10.*" Thus, contrary to Examiner's statement, the capacitor doesn't produce the constant voltage, but the tuned circuit of inductance and series connected capacitance produces that constant voltage. Moreover as shown in Fig. 1 that output filter 34 is located at the juncture of what Examiner refers to as "branches" in the circuit. Thus, not only does that series tuned circuit receive voltage from what Examiner refers to as the first branch, the tuned circuit also receives voltage from the so-called second branch, should the first branch fail. That operation is consistent with the cited statement in the Hansel patent, and is inconsistent with Examiner's assertions.

"*Hansel teaches the use of an output rectifier, which is interpreted as a regulator, and an output filter (See Fig. 1).*"

Applicant disagrees with Examiner's interpretation. Applicant does not understand how a rectifier can be "interpreted" as a regulator. Is there something in the Patent Law that permits the patent office to change the content of an element in a reference by interpretation the element to be something other than that given in the reference: as example interpreting a truck as an airplane, or interpreting a resistor as a battery, and so on? Applicant submits that such interpretation is unreasonable. Being unreasonable the interpretation of the content of Hansel is therefore improper in any evaluation of obviousness of the claims under 35 USC 103.

"*Hansel does not teach the power supply including a battery charger, does not teach the power supply being for an avionics system.*" Applicant submits that the statement of what Hansel does not teach (or show) is incomplete in a material respect so as to be misleading. The missing statement is as follows: HANSEL DOES NOT SHOW OR TEACH THAT THE BATTERY IS RECHARGEABLE (and in fact, the battery is not rechargeable).

Applicant does not understand the motive for including a battery charger in the circuit of Hansel or how the person of ordinary skill would be physically able to include the battery charger of Gregorich in the power supply battery backup of Hansel and obtain a combination that is functional. Applicant's reasoning is that Hensel contains a backup battery. But there is no clue or statement in Hensel that the backup battery in Hensel is rechargeable, and there is no teaching or suggestion of a recharger in Hensel. The evidence therefore is that the battery of Hensel is not rechargeable.

Examiner is perhaps suggesting that the application of a battery charger to a non-rechargeable battery makes that battery into one that is rechargeable or that the combination of a battery charger to a non-rechargeable battery is acceptable to meet the applicant's claim even if the proposed combination is inoperative. Applicant submits that either suggestion is poor science and poor engineering and that one skilled in the art would never entertain either such thought. Using a battery charger on a non-rechargeable battery is likely to result in an explosion or fire. Applicant submits that

under the patent law one cannot show obviousness of a patent claim by divining an inoperable combination.

Further, there is no motive or reason to change the voltage levels in Hensel. According to Hensel the synchronous switching system functions properly. What would lead any person to make the system of Hensel non-synchronous as in Breikss? What would lead one skilled in the art to take an action that is contrary to that desired by Hensel and destroy his synchronous system. Applicant submits that such is not taught. The proposed modification is contrary to the teachings of Hensel. For that additional reason, applicant submits, the rejection fails.

The pending application to Goossen was cited (and applied) to show that electronic modules are known to be of a rectangular shape, contain a printed wiring board and house an electrical power supply.

Applicant refers to the discussions of the rejection of claim 1 and the rejection of claim 3, which are incorporated herein by reference. For that reason alone, applicant submits that the foregoing rejection of claim 9 as being obvious is not well founded.

Claim 9 recites that the battery, electronic switch and a multi-layer PCB are located inside the housing. That is not disclosed by any of Hansel, Breikss, Gregorich, Wiegel or Goossen et al. The claim recites that the wiring of the filter input to a first contact of the connector. That is not disclosed. The claim recites that the output of the controlled power conversion circuit is wired to a second output of the connector. That is not disclosed. The claim recites that the smoothing output filter has an output connected to a third conductive pin of the connector. That is not shown or taught by any combination of the applied reference either.

Because the reconstruction of Hansel does not include all of the elements recited in claim 9, applicant submits that the reconstruction proposed by the Patent Office is incomplete. Specifically lacking some elements recited in the claim the claimed combination cannot be rendered obvious by the cited references in applicant's view. For the foregoing additional reason applicant is of the opinion that the claims define patentable subject matter. Applicant respectfully requests that the Patent Office reconsider and withdraw the rejection of claim 9.

Claim 10, dependent on claim 9, is believed to be patentable for the reasons advanced in the discussion of the rejection of claim 9, which is incorporated herein by reference.

Applicant believes that the foregoing amendment to the specification and claims places the application in condition for allowance. Accordingly, an early notice of allowability is respectfully requested.

The patents to Spitaels et al., US 6,445,088, Tsujikado et al., US 6,597,074 and Meir, US 6,275,946, cited of interest, were considered, but do not appear to merit additional discussion.

CLAIM SUMMARY.

Claims 1-10 were in the application as filed and remain present for examination.

ADDITIONAL CLAIM FEES

The number of claims as originally filed in total remains below twenty. The number of independent claims remains unchanged at three. Accordingly, no additional filing fee is due.

The undersigned attorney is available by telephone to provide appropriate assistance to Examiner in an attempt to expedite the grant of the patent. Feel free to telephone.

Respectfully submitted:

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